MRI versus histological methods for time course monitoring of steatosis amount in a murine model of NAFLD

Titre	MRI versus histological methods for time course monitoring of steatosis amount in a murine model of NAFLD
Type de publication	Article de revue
Auteur	Leiber, L.-M. [1], Boursier, Jérôme [2], Michalak, Sophie [3], Roullier, Vincent [4], Fizanne, Lionel [5], Chaigneau, Julien [6], Roux, Jerôme [7], Moal, Valérie [8], Flamment, Melissa [9], Bazeries, P [10], Ducluzeau-Fieloux, Pierre-Henri [11], Aubé, Christophe [12]
Pays	Pays-Bas
Editeur	Elsevier Masson
Ville	Amsterdam
Type	Article scientifique dans une revue à comité de lecture
Année	Sous presse
Langue	Anglais
Date	2015
Titre de la revue	Diagnostic and Interventional Imaging
ISSN	2211-5684
Résumé en anglais	**PURPOSE:** Hepatic steatosis is an increasingly frequent disease with potentially severe complications. A simple quantification method is required for pretherapeutic studies to allow steatosis monitoring. This study aimed at evaluating steatosis quantification via a standard 1.5T MRI machine in a murine model. **MATERIALS AND METHODS:** Eleven groups of two rats received a choline methionine deficient diet. MRI was performed at days 0, 2, 4, 5, 6, 7 and 8, and weeks 2, 3, 4 and 5. A phased array surface coil system was used to acquire a GE T1 in- and out-of-phase multi-echo sequence, with neither cardiac nor respiratory synchronization. Steatosis was calculated with the 3-echoes method. Histological quantifications were performed both by optical analysis (percentage of fatty hepatocytes) and by automated measurement of the area of steatosis (AOS). The reference was total intrahepatic triglycerides (TIT). Protocol was approved by the ethic committee. **RESULTS:** Steatosis without inflammation, increasing with diet duration, was obtained. MRI provided better agreement (intraclass correlation coefficient) with TIT (0.889, $p<0.001$) than did AOS (0.629, $p=0.001$) or optical analysis (0.280, $p=0.098$). MRI permitted closer monitoring of TIT over time than did AOS or optical analysis. By multivariate analysis, MRI was an independent predictor of TIT on first step and ALT on second step. A model combining these 2 variables provided excellent agreement with TIT (0.953, $p<0.001$) and permitted excellent monitoring of steatosis over time. **CONCLUSION:** MRI is reliable, easy, fast and superior to histological techniques for the assessment of hepatic steatosis in a murine model.

URL de la notice	http://okina.univ-angers.fr/publications/ua12789 [13]
DOI	10.1016/j.diii.2015.03.006 [14]
Lien vers le document	http://dx.doi.org/10.1016/j.diii.2015.03.006 [14]
Autre titre	Diagn Interv Imaging
Identifiant (ID) PubMed	25934180 [15]

Liens
[1] http://okina.univ-angers.fr/publications?f[author]=7236
[2] http://okina.univ-angers.fr/jerome.boursier/publications
[3] http://okina.univ-angers.fr/s.mic/publications
[4] http://okina.univ-angers.fr/publications?f[author]=1909
[5] http://okina.univ-angers.fr/l.fizanne/publications
[6] http://okina.univ-angers.fr/j.chaigneau/publications
[7] http://okina.univ-angers.fr/jerome.roux/publications
[8] http://okina.univ-angers.fr/v.moal/publications
[9] http://okina.univ-angers.fr/publications?f[author]=734
[10] http://okina.univ-angers.fr/publications?f[author]=22447
[11] http://okina.univ-angers.fr/p.ducluzeau/publications
[12] http://okina.univ-angers.fr/ch.aube/publications
[13] http://okina.univ-angers.fr/publications/ua12789
[14] http://dx.doi.org/10.1016/j.diii.2015.03.006
[15] http://www.ncbi.nlm.nih.gov/pubmed/25934180?dopt=Abstract